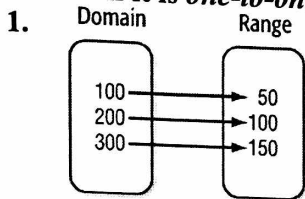


Unit 3 Review Functions

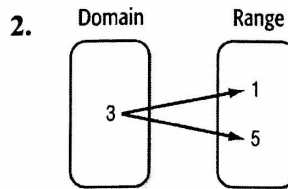
Name: Key

State the domain and range of each relation. Then determine whether each relation is a function. If it is a function, determine if it is *one-to-one*.



$D: x | x = 100, 200, 300$
 $R: y | y = 50, 100, 150$

function one to one



$D: x | x = 3$
 $R: y | y = 1, 5$

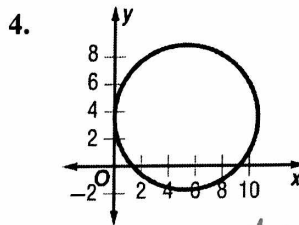
Not a fn not 1 to 1

3.

x	y
1	2
2	4
3	6

$D: x | x = 1, 2, 3$
 $R: y | y = 2, 4, 6$

function, 1 to 1

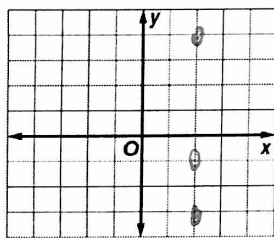


$D: x | 0 \leq x \leq 10$
 $R: y | -2 \leq y \leq 8$

Not a fn Not 1 to 1

Graph each relation or equation and determine the domain and range. Determine whether the relation is a function, is *one-to-one*. Then state whether it is discrete or continuous.

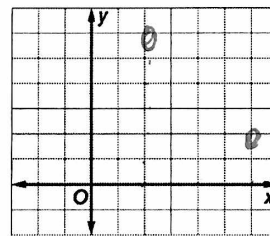
5. $\{(2, -3), (2, 4), (2, -1)\}$



$D: x | x = 2$
 $R: y | y = -3, -1, 4$

Not a fn
 Not 1 to 1
 Discrete

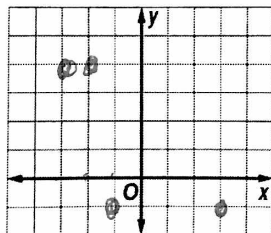
6. $\{(2, 6), (6, 2)\}$



$D: x | x = 2, 6$
 $R: y | y = 2, 6$

Function
 1 to 1
 Discrete

7. $\{(-3, 4), (-2, 4), (-1, -1), (3, -1)\}$



$D: x | x = -3, -2, -1, 3$
 $R: y | y = -1, 4$

Function
 Not 1 to 1
 Discrete

Find each value if $f(x) = 2x - 1$ and $g(x) = 2 - x^2$.

8. $f(0)$

$2(0) - 1$
 -1

9. $f(12)$

$2(12) - 1$
 23

10. $g(4)$

$2 - (4)^2$
 $2 - 16$
 -14

11. $f(-2)$

$2(-2) - 1$
 -5

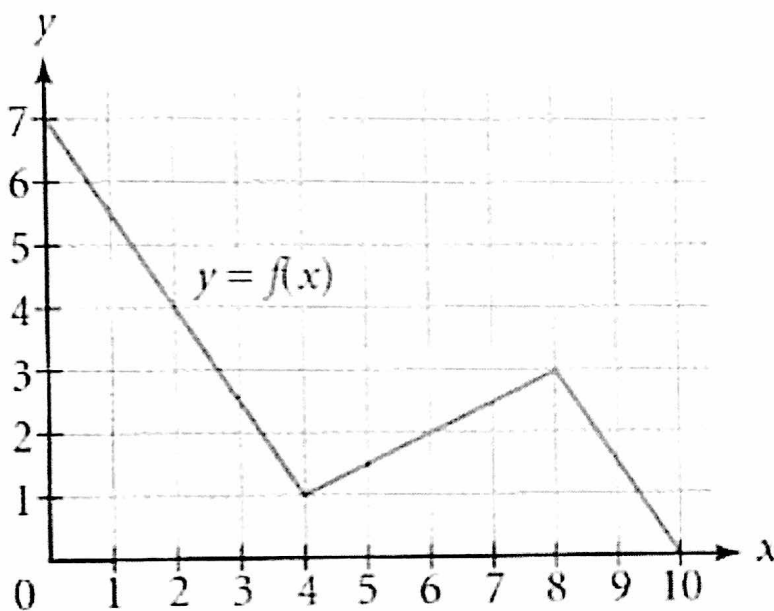
12. $g(-1)$

$2 - (-1)^2$
 1

13. $f(d)$

$2d - 1$

For 14-18, use the graph below



In the graph above $f(4) = 1$.

Find the following values of the function.

14. $f(6) = 2$

15. $f(2) = 4$

16. $f(0) = 7$

17. $f(5) = \approx 1.5$

18. For which values of x is this statement true?

$f(x) = 1$ 4 9.3

State whether each function is a linear function. Explain.

19. $y = 3x$ yes

20. $y = -2 + 5x$ yes

21. $2x + y = 10$ yes

22. $f(x) = 4x^2$ no

23. $\frac{3}{x} + y = 15$ no

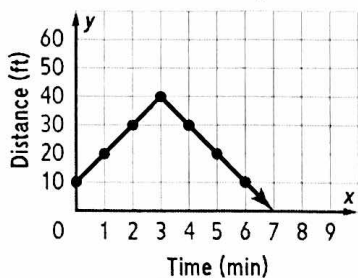
24. $x = y + 8$ yes

25. $g(x) = 8$ yes

26. $h(x) = \sqrt{x} + 3$ no

27. **DOGS** Rob and Janet are standing next to each other. They both have dogs that walked away from them at the same time. The graph shows a function modeling the distance of Rob's dog from him over time. The table shows a function modeling the distance of Janet's dog from her over time. State whether each function is a linear function. Explain.

Rob's Dog



No
Not a line

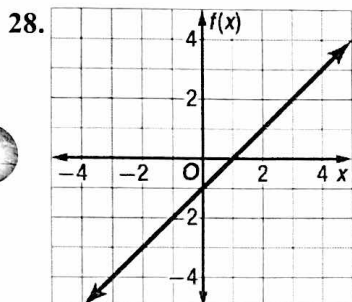
Janet's Dog

Time (min)	0	1	2	3	4
Distance (ft)	0	15	30	45	60

+15 +15 +15 +15

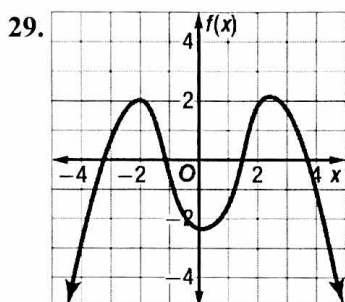
yes
constant rate of change

Describe the end behavior of the graph of each function.



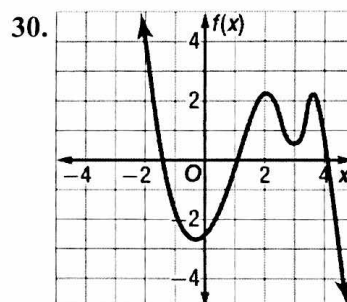
As $x \rightarrow \infty$, $f(x) \rightarrow +\infty$

As $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$



As $x \rightarrow \infty$, $f(x) \rightarrow -\infty$

As $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$

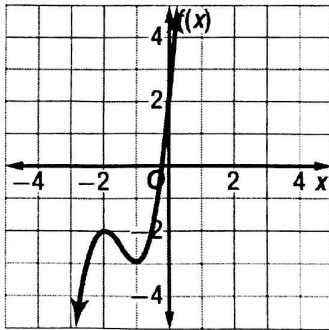


As $x \rightarrow \infty$, $f(x) \rightarrow -\infty$

As $x \rightarrow -\infty$, $f(x) \rightarrow +\infty$

The graphs below are of functions with extrema. Estimate the x -coordinates at which relative maxima and/or minima occur. Then estimate the zeros.

31.



a. Estimate the values of x where relative maxima are located.

-2

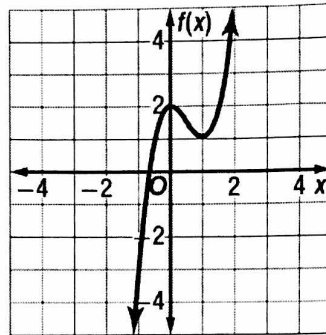
b. Estimate the value of x where there is a relative minima.

-1

c. Estimate the values of x where the zeros are located.

Between $-1 + 0$

32.



a. Estimate the values of x where relative maxima are located.

0

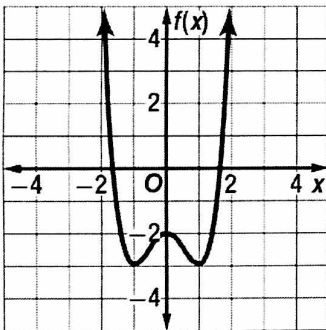
b. Estimate the value of x where there is a relative minima.

1

c. Estimate the values of x where the zeros are located.

Between $-1 + 0$

33.



a. Estimate the values of x where relative maxima are located.

0

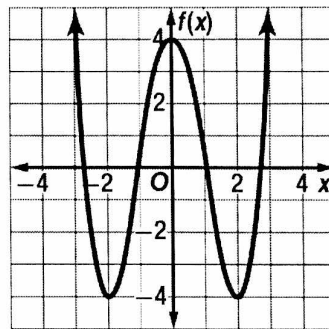
b. Estimate the value of x where there is a relative minima.

~~Between -1 and 1~~ $-1, 1$

c. Estimate the values of x where the zeros are located.

Between $-2 + -1$
Between $1 + 2$

34.



a. Estimate the values of x where relative maxima are located.

0

b. Estimate the value of x where there is a relative minima.

$-2, 2$

c. Estimate the values of x where the zeros are located.

Between $-3 + -2$, 1 , 1
~~Between 2 + 3~~